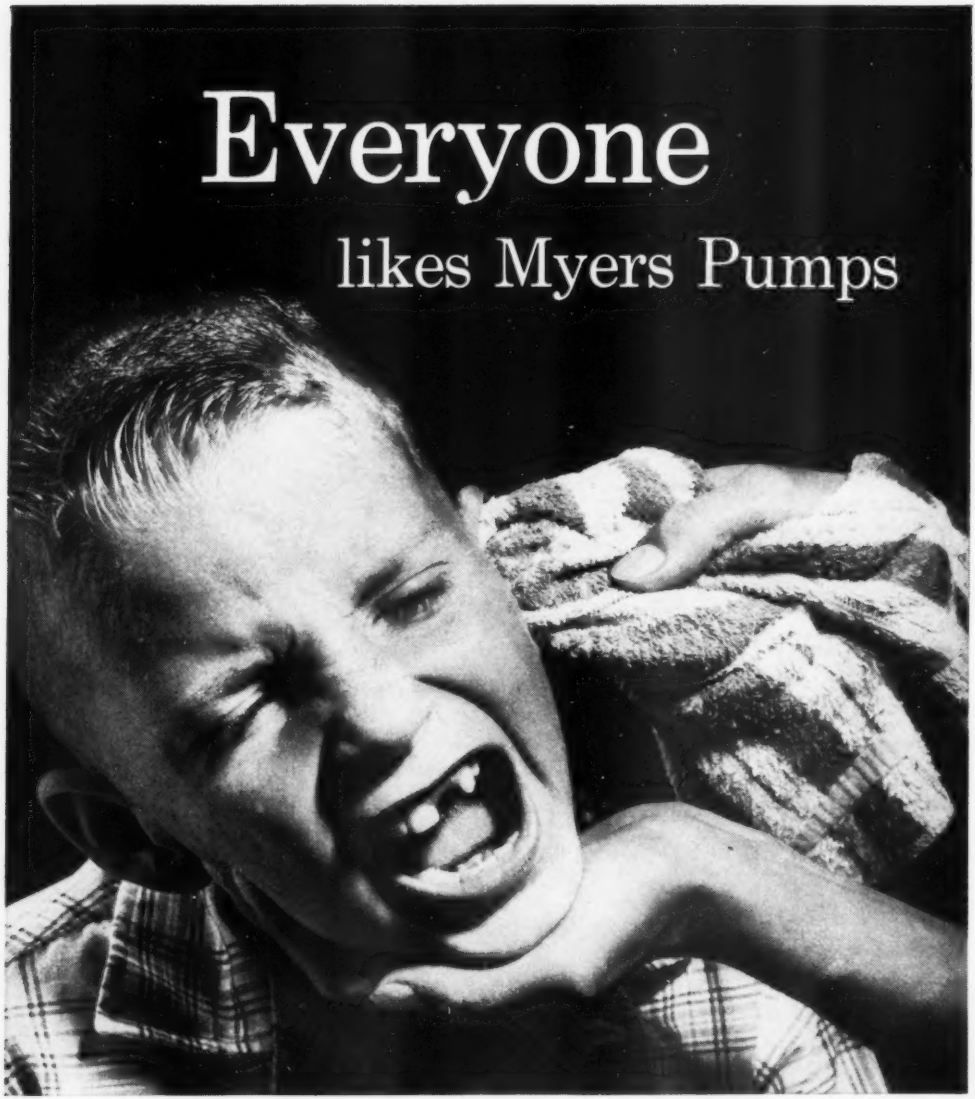
JANUARY-FEBRUARY 1961

electricity on the farm

SOUTHEAST EDITION

Fluorescent lights help this Carolina Peach to see when a peach is a peach *of a peach.* *See p. 6*



Yes, even Bobby . . . ! *He may have a doubt or two when mom scrubs his ears. But when he sees that cold, sparkling glass of water at the table, his doubts vanish. Just like all water service problems vanish when you install a dependable Myers OLYMPIAN pump. See your Authorized Myers Pump Dealer today! He's fully qualified to engineer the right pumping system for your home or farm.*

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EOF

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W. J. RIDOUT, JR., *Publisher*
HUGH J. HANSEN, *Editor*
TOM MILLIGAN, *Southwest Editor*
ALBERT MORRIS, JR., *Southeast Editor*
RUTH GAFFNEY, *Home Editor*
A. J. RADWIN, *Assistant to the Editor*
R. A. NELSON, *Presentation Editor*
K. H. GORHAM, *Advertising and Business Mgr.*
C. J. SCHWARTZ, *Eastern Sales Mgr.*
G. B. PARKER, *Midwest Sales Representative*

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Raise More Pigs

It is estimated reliably that about 3 million pigs are lost in this country every year as the result of mashing or chilling. About ⅔ of these die within 48 hours after birth. The loss of so much potential pork is costly. After all, whether a sow raises 5 or 10 pigs from a litter does not change the dollar investment in her. She has eaten the same amount of feed, required the same amount of medication, labor and housing. By the time pigs are born, there already is a considerable investment in them.

This brings us to observe that farmers generally have found that by using some type of farrowing jacket and by brooding they are able to raise to market age an average of 1½ pigs more per litter. Brooding actually serves a dual purpose: it keeps the pigs warm and it attracts them away from their mother to a place where they are safe from mashing. When you think about the value of pigs that can be saved, brooding becomes virtually a necessity.

ALBERT MORRIS

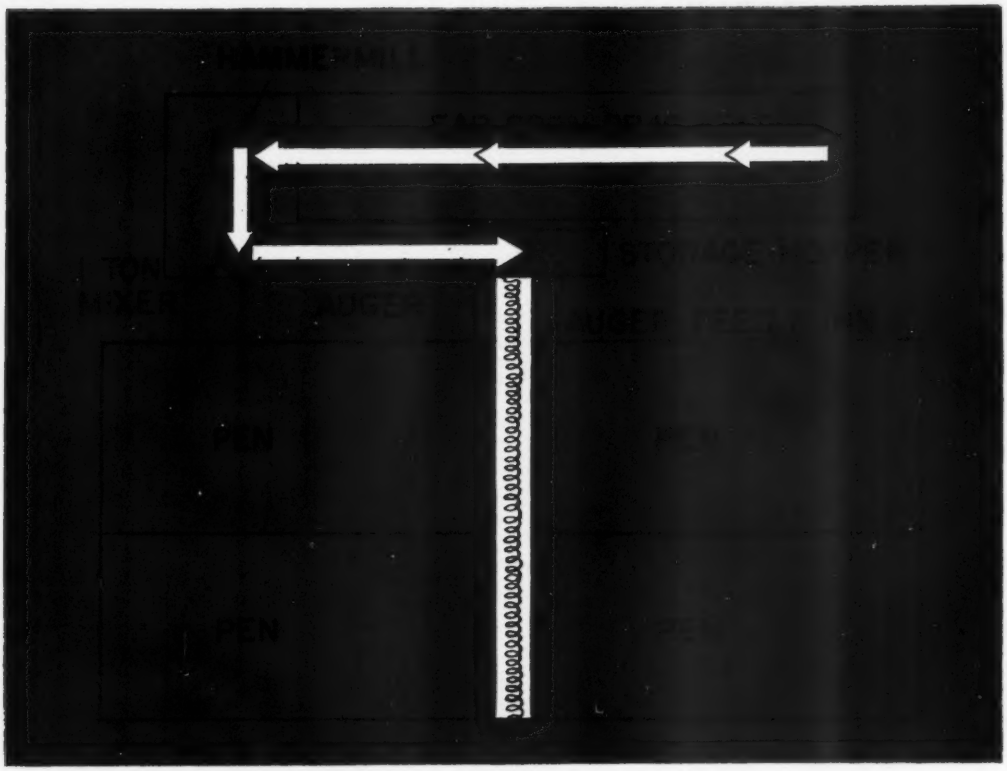
EOF Goes to Cambodia

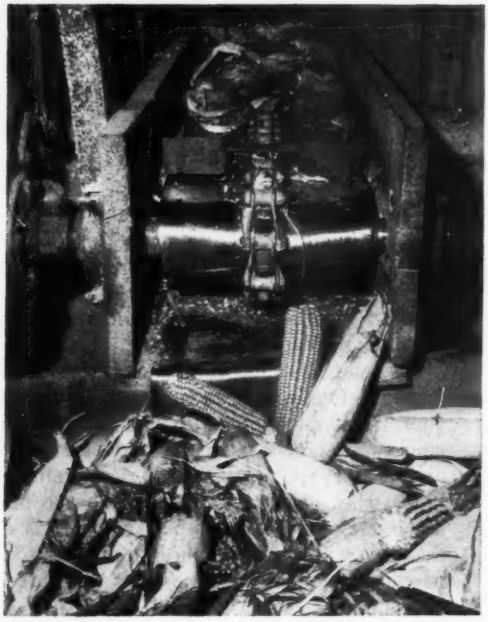
We received a letter recently from Cambodia. It came from head of a party of U. S. Agricultural Scientists on a two-year tour of duty in that little South Asian country which is about the size of Missouri or Oklahoma and has over 3 million people.

These scientists are assisting the Cambodian National College of Agriculture in developing and expanding agricultural courses, providing teacher training, and developing a demonstration farm. They selected *Electricity on the Farm* as one source of ideas for their work.

We, of course, concern ourselves with American farming. Our goal is to show you how you can do your farm operations with less labor, with greater efficiency, or in a manner that will help you make more money. Certainly the agriculturalists in Cambodia who raise primarily rice, tobacco and cotton are interested in these aspects too. It is our hope that they will be able to put into practice some of the new ideas and new developments we share with you each month.

HUGH J. HANSEN

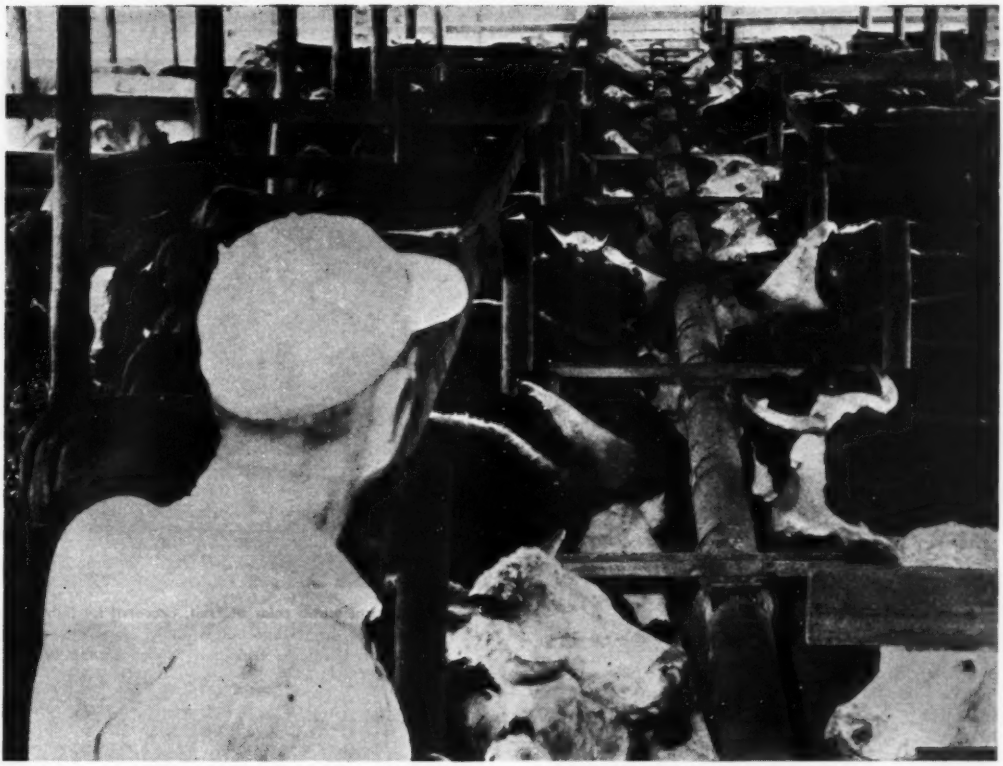




More profitable beef feeding when

By ALBERT MORRIS, JR.

Drag conveyor, extending 90 feet, is a continuous chain operating off sprockets. Cross-pieces are set at 24-in. intervals. Steel sheet on which corn moves smoothly is stationary.



Auger tube feeder powered by 2 hp motor simplifies feed distribution into 100 ft. bunk.

Conveyors Carry Corn to Cattle

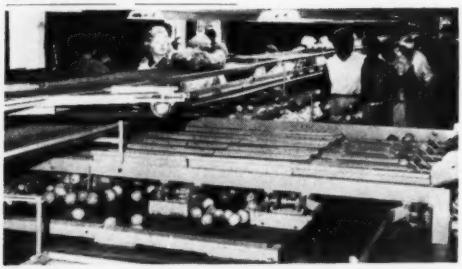
A mechanized feedlot that handles 250 cattle is being used by A. R. Taylor and Richard Munchen on their farm near Clanton, Alabama. The cattlemen buy ear corn locally during the harvest season and store it in a 7000-bushel barn. That's where their mechanized feeding system begins.

The barn is 20 x 100 feet. It has a sloping floor from either side to give a V-shape. A drag belt operates in the 14-in. trough at the low point of the V, moving ear corn to a 40 hp hammermill that processes 1½ tons per hour.

The conveyor, a continuous chain with cross pieces at 24-in. intervals, operates off a sprocketed wheel. The corn moves smoothly on a 12-inch-wide stationary steel strip beneath the chain. The trough in which the conveyor operates is covered with short lengths of board and these are removed one by one as the barn is emptied. The conveyor is driven by a 3 hp electric motor with a 19.6 to 1 reduction gear.

From the hammermill, the ground corn is delivered to a 1-ton horizontal mixer and combined with other ingredients to make the beef ration. After mixing, it is held in a bin above the feeding hopper. It flows down into a 100-ft. auger which moves it down the feed trough. This auger, driven by a 2 hp motor, operates in a 9 inch tube with openings at regular intervals through which feed is dispensed into the bunk, where the cattle make quick work of it. □□

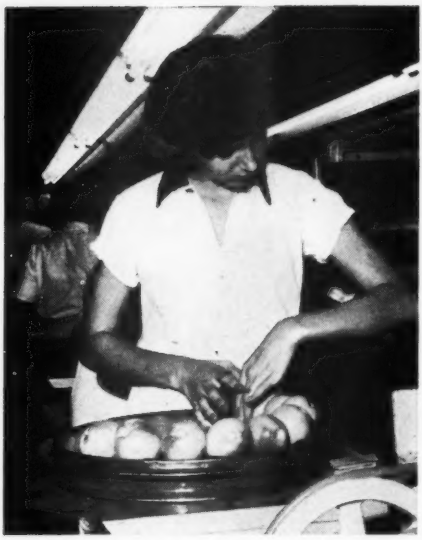
COVER STORY



Warm white fluorescents help workers select peaches for placement in rings, which are then packed as fancy fruit. Peaches not selected here go directly to mechanical filler and into basket liners.

Hydrocooler chills peaches down to 46-52° in 20 minutes. Chilling helps preserve quality of the fruit.

Peaches not selected as fancy fruit are mechanically loaded into baskets after the baskets have been lined on this machine. Basket is placed over liner and inverted in this operation.



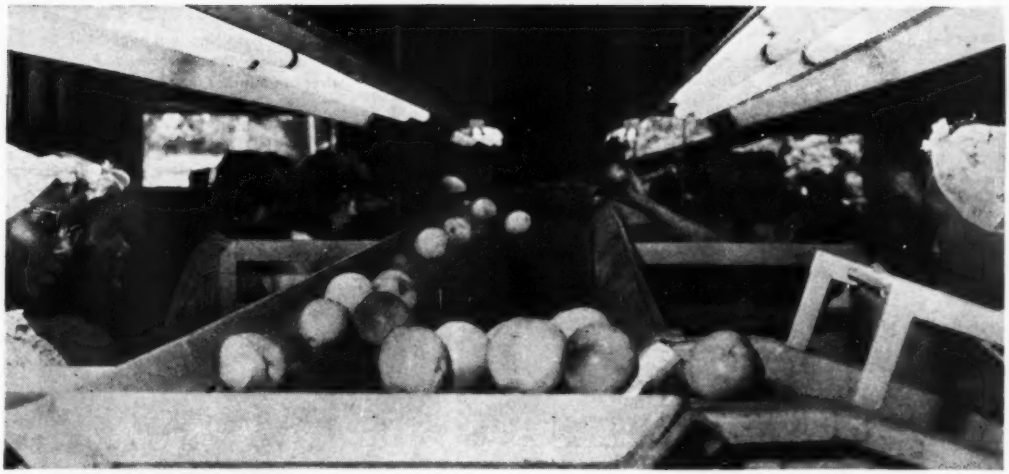
Natural warm color of fruit, accented by light from deluxe warm white bulbs, allows ringers to choose uniformly-colored fruit that will go on top layer of basket.

Fluorescent light helps graders determine . . .

When a Peach is a Peach of a Peach

Harry Bell and Pete Berry bought an old country schoolhouse near Johnston, South Carolina, and converted it into a modern peach packing plant. They process fruit fast enough to fill a truck trailer in 60 minutes, or a rail car in 70 minutes.

As highly mechanized as the B & B operation is, hand labor is still needed for grading and ringing the fruit. At three points along the processing line graders remove hard culls, overripe or damaged peaches, and their judgment about ripeness is based largely on color. Recognizing this, Bell and Berry had to determine the kind of lighting to use



Plenty of light from fluorescents helps graders at three points on the B & B processing line.

Processing line is divided into two sections, all motors in each section controlled by relay switches. Thus, Bell can control both sections with remote control switches at this convenient point, or with other remote switches placed at critical points along the line.

above grading tables. They questioned other packers, agricultural services, and their power supplier.

Light is warm white

Based on the information received, they chose 96-inch slimline fluorescent fixtures and deluxe warm white tubes. These fixtures parallel the grading belts, and are also used above the belts where ringers work.

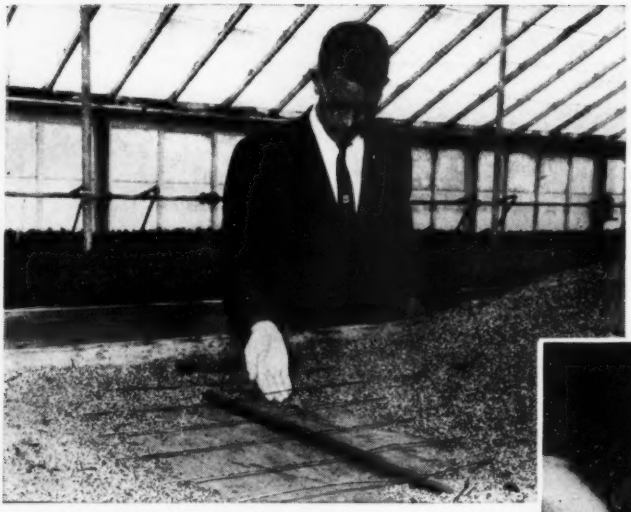
Light from the warm white fluorescents accents the peaches' natural warm colors. Bell believes some buyers have been influenced to purchase his fruit after seeing it on the grading and ringing belts. He believes this kind of light also helps graders detect small skin breaks.

Bell and Berry consulted their power supplier about the plans for their electrical system too. As a result, they wired so that the main disconnect switch in the packing house can interrupt all service except that to two water pumps. That way, the separately-controlled pumps will operate, in case of fire, even with all other power shut off.

Emergency cutoffs at 3 points

The peach growers have a separate switch with overload protective device for each motor on the processing line. The line is divided into two sections. All motors in one section can be stopped or started by a single relay switch. Remote switches are located at three points so that operations can be halted quickly if anything goes wrong, or if one section is moving fruit faster than the other.

There are 14 steps in the processing line set up by Bell and Berry, beginning with the dumping station. A peach is on the processing line about 25 minutes—it is dumped, graded for softness, washed and defuzzed, pre-sized, graded to remove hard culls, cooled, dried by fans blowing air on it, graded for skin breaks, sized, ringed, put into liner, basketed, turned and capped for delivery to the buyer. □□



Propagation bench heating system at Cottage Hill Nursery uses No. 10 galvanized resistance wire stapled to wooden cross-strips that support it ¾-inch above bottom of the bed. Parallel wires are 6 inches apart.

Difference that low-voltage heating makes is clearly shown here. These cuttings were put into propagation benches in the same house on the same day. After 4 months, plants at right from heated bed have well-developed, vigorous root systems.

Plants Get Boost From Low Voltage Heating

Several commercial nurseries in the Mobile, Alabama area are using low-voltage heating systems in plant propagation benches. Dr. R. L. Self, plant pathologist at the Ornamental Horticulture Field Station of Auburn University, has been doing experimental work with this system, too.

The objective is to permit rapid propagation of plants in seasons other than summer. Dr. Self says that plants in unheated houses just sit during most of the winter, requiring about two to three times as long to develop root systems as they do under summer conditions.

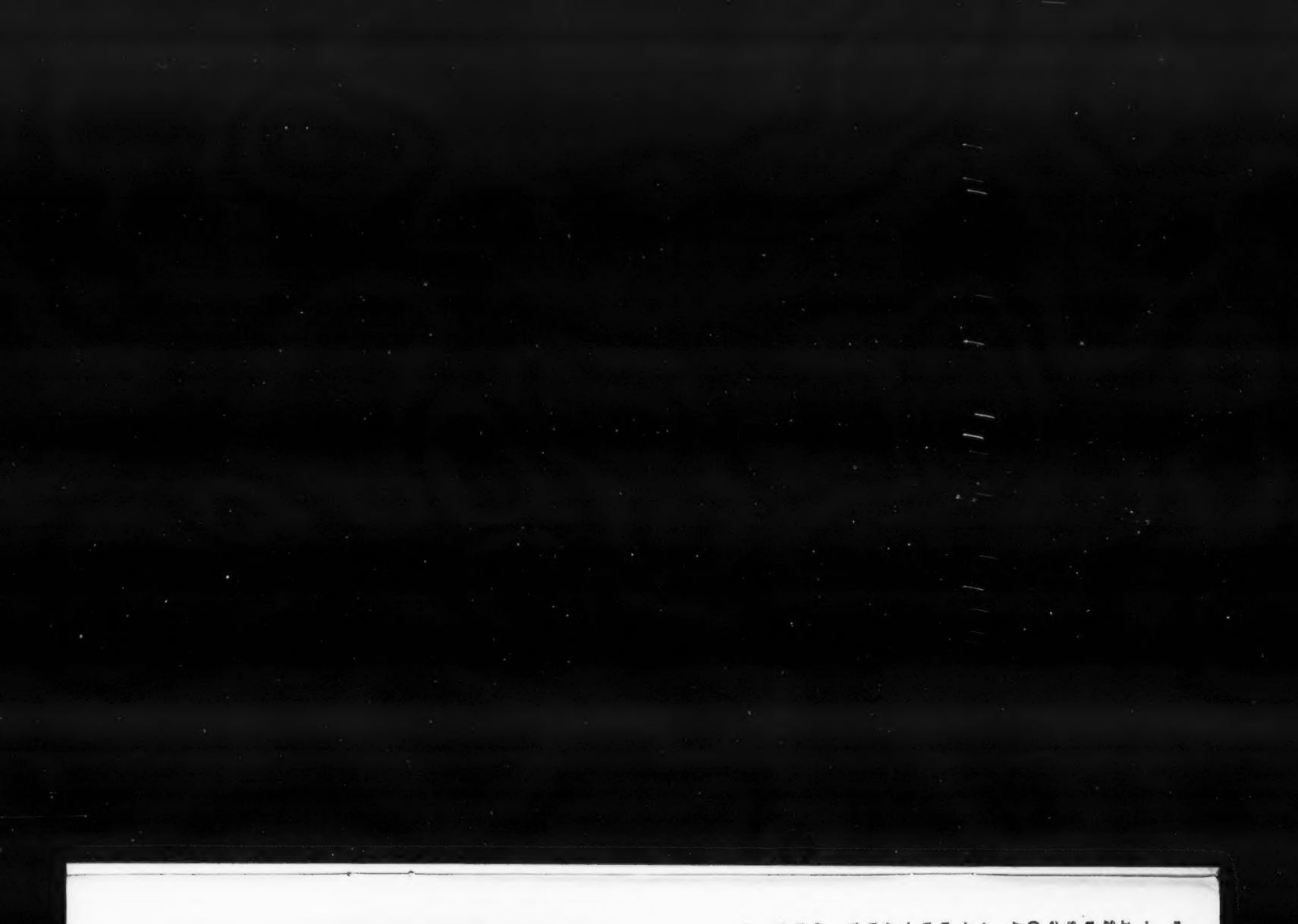
Another reason it is desirable to propagate in cooler seasons is that diseases which cause damping-off or leaf spotting are virtually eliminated. These occur most in warm and humid weather. Rapid year-round propagation also increases capacity and allows fuller utilization of greenhouses.

In his experiment, Dr. Self used a 3000-watt transformer, lowering the voltage from 240 volts to 32. He had two paralleled 278-ft. lengths of No. 10 galvanized resistance wire spaced to provide 8 watts per sq. ft. of bed.

The wire is relatively inexpensive and convenient to use in the beds because it is not easily damaged during installation or in cleaning. It is placed about ½-inch from the bottom of the propagation bench. Dr. Self advises keeping cuttings one to two inches above the wires.

The effectiveness of the system in maintaining a relatively consistent temperature in propagation benches during winter conditions is indicated by Dr. Self's records. During a 5-week period beginning January 4, temperature in a heated bench ranged from 68° to 82°, while the temperature in an unheated bench ranged from 47° to 75°. Maximum temperature differential was 31°. Dr. Self says 72° to 75° in the bench is ideal.

Hunter H. Boulo of the Cottage Hill Nursery has a similar 32-volt installation, using No. 10 galvanized wire. The parallel lengths of wire are 6-inches apart and are stapled to wooden strips that support them about ¾ inch above the bottom of the bed. Boulo uses vermiculite as a growing medium. His installation gives near 6¼ watts per square foot. Operation is regulated by thermostats.



You can't see it . . . you can't hear it . . . !

. . . yet you get all the water you want with a

The submersible pump is growing steadily in popularity among farm owners who want larger water yields at higher pressures.

You can't see a submersible pump because it actually is installed in the well under water. You can't hear a submersible pump because the motor is under water, deep in the well, too. These two factors are largely responsible for increased acceptance of submersibles among farm owners.

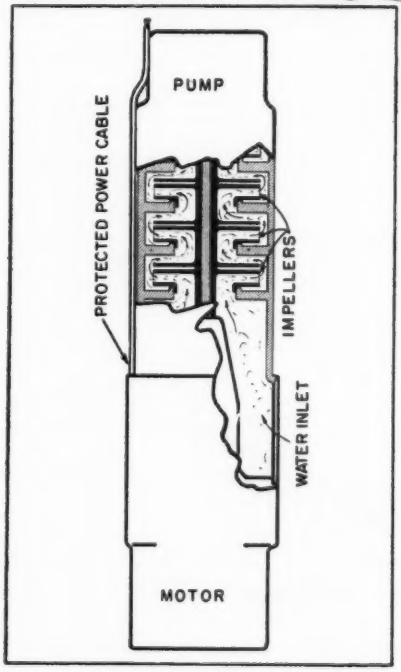
Because a submersible pump goes right into the well to pump water, rather than relying on extra forces to pull or force water to the top, it is the most efficient pump on the market today. Let's say, for example, that we want 600 gallons of water per hour from a well. On this particular well, a submersible pump, powered by a ½ hp motor will do the job. For the same amount of water it may take a 1 hp jet pump or a 2 hp reciprocating pump. These large differences between pump horsepowers won't be true in all instances, but they do show the relative efficiencies of these pumps.

Here's how the submersible pumps water. Picture a tube about 4 inches in diameter and about 3 feet long (the larger the horsepower the longer the pump), attached to the bottom of a water drop pipe and lowered into the well.

In the bottom half of the tube is the submersible's motor. In the top part is a series of impellers, usually seven or more—the larger the horsepower the more impellers. These impellers are similar to (please turn page)

. . . new submersible pump!

Cut-away illustration shows how submersible pump, motor and all, is placed deep in well. Pressure tank may be right above well or offset a distance away. Cut-away diagram of pump, below, shows impellers which build water pressure.



those in jet pumps. Each impeller stage and its housing (diffuser) assembly pushes the water to the next stage. Water pressure is increased at each stage. By the time the water has gone through the last stage, it has enough pressure to push itself through the drop pipe to the top of the ground into the pressure tank, even from great depths.

There are two basic types of motors used in submersible pumps. One is lubricated by oil, the other by water. In either case, the motor stays relatively cool because it is surrounded by cool water in the well. The motor gets its electric power from a special waterproof cable connected to a control box at the top of the well.

Works on centrifugal principle

In the simplest terms, therefore, the submersible pump is actually a multi-stage centrifugal pump pushing water to the top of the well through a single pipe. There is no recirculation of water as in a jet pump, no lifting of water as with a reciprocating (piston) pump.

If submersibles are so efficient, why are they just now becoming popular? Submersible pumps are not a new idea. The first patent on this type of pump actually was awarded in about 1908. The cities of Los Angeles and New York have used large submersible pumps for water supply for about 20 years. It has only been in recent years, however, that smaller motors have been developed for submersibles at a price that would make them practical for private homes and farms.

In 1953, about one out of every 20 home water pumps installed was a submersible. Today it is closer to one in eight. And, considering only pumps installed in deep wells, the figure is nearer to one in five.

The submersible pump offers many advantages to farm owners who want more water at higher pressures from deep wells. Because a smaller horsepower submersible can offer the same performance as a larger horsepower jet or reciprocating pump, it takes less electricity to produce the same amount of water.

Only one drop pipe is needed in a submersible installation. Most deep-well jet installations require two, while reciprocating pumps have the added inconvenience of shafting.

No surface protection is needed for the pump, such as a well pit or pumphouse to prevent freezing, because the pump is installed underground.

The pressure tank can be offset away from the well. This means the tank can be closer to the water outlet, minimizing pressure loss.

There is very little maintenance cost with a submersible pump if it is properly installed. Motor overload protection is built into the control box at the top of the well. Many self-maintenance features are built into the pump and motor. A good submersible installation should give a farm owner at least 10 to 15 years of dependable operation before the pump needs to be pulled for maintenance.

One determining factor, however, in how long a submersible pump can operate without major maintenance is the condition of the well water. Sand in well water has been a problem with submersibles. Sand acts as an abrasive—too much sand can cause a submersible to lose efficiency or even stop operating long before it should. However, as new designs and new materials are used in submersible pumps, the sand problem is becoming less of a factor. It is still wise, however, to check sand conditions in the well before installing a submersible pump.

There are other factors that keep the submersible from being a jack-of-all-wells. For one, it is designed primarily for deep wells, operating most efficiently at depths of 40 feet or more. In some instances, however, submersibles have been used in shallow well conditions.

Most submersible pumps are designed to fit no smaller than a 4-inch-diameter well (one manufacturer now offers a submersible for 3-inch wells). Existing 2-inch wells will not take a submersible, but most new wells drilled today are 4 inches or larger and will accommodate a submersible pump.

Well must be straight

It is also important to have a relatively straight well. A submersible pump can possibly become lodged in the casing of a crooked well.

As with any type of pump, the water yield from the well should be large enough to accommodate a submersible. Pump installers usually will know or test well yields before installing a submersible. Submersibles can be adapted to weaker wells by using a restricting valve or special water level shut-off equipment.

Can you improve your farm water supply with a submersible pump?

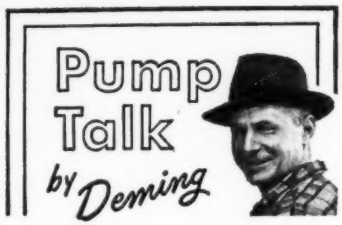
Do you need more water and pressure at less cost than you are now getting?

Does your well have a good water yield?

Is your well relatively free of sand?

If you can answer "yes" to these three questions, there will likely be a submersible in your future.

(Editor's Note: Although jet pumps and submersibles will serve 90% of the nation's farm water needs, there are still individual situations that require different types of pumps. Reciprocating and other types of farm water pumps will be discussed in next article.)



Gallons & Gallons!

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That's right, no need for an expensive pit or pump house with a DEMING Submersible. The tank and controls can be located away from the well with the service line placed below ground. The entire pump, motor and all, is deep in the well, protected from freezing and tampering. It never needs priming and is practically noiseless in operation.

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During National Electrical Week . . . . .

Inspect for Electrical Safety

The week of February 5-11 is National Electrical Week—a time when we all can sit back in our bright, comfortable homes and reflect a little on the benefits electricity has brought to us. Farmers, especially, have much to thank electricity for since this power has been instrumental in making work easier and more profitable.

Here are some "do's" and "don'ts" of electrical safety around the home and farmstead. Following them strictly will substantially reduce your chances of an electrical accident. Unsafe conditions should be corrected immediately.

DO . . . let a cord hang free instead of over a nail, wrapped around a pipe or bedstead, or fastened to the woodwork. Damaged insulation can cause a fire.

. . . use switches that close and open with a positive, firm action. Worn out switches should be replaced.

. . . keep extension cords out from under rugs or where they may be stepped on. Insulation is not made for such abuse.

. . . refrain from using appliance cords that have become worn and frayed.

. . . use nothing larger than 15-ampere plug fuses for lighting circuits, unless you are certain your house has been wired with the larger No. 12 wire throughout. Never use larger than 20-ampere fuses in any event.

. . . have all electrical wiring and other repairs done by qualified electricians.

. . . disconnect appliances by grasping plug firmly and pulling out gently, instead of by tugging on the cord.

. . . have enough circuits for the electrical appliances you use.

. . . buy approved cords. Use only cord sets and power supply cords with Flag labels carrying Underwriters' approval on entire assembly.

. . . make sure all switches and outlets have cover plates.

. . . keep fuse or circuit breaker box free of dust and dirt and its door closed at all times. Have spare fuses of proper sizes always on hand.

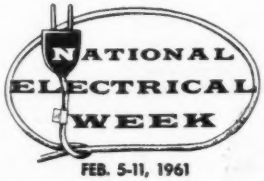
DON'T use any substitute for a fuse, such as a penny. Remember, fuses protect against overloads.

DON'T use any type of electrical appliance while in the bathtub. Severe shock may result.

DON'T use small heaters to vaporize inhalants. Heaters are not intended for this purpose.

DON'T touch metal stands, pipes or other metal when operating a switch or electrical appliance.

This year's National Electrical Week theme is "Make Electricity Work for You . . . on the farm." There's no farm yet that is so highly mechanized that another motor, light, heater or other piece of electrical equipment couldn't make the operator's work easier, more comfortable or more profitable. Electricity is a willing hired man—let it work for you whenever and wherever you can.



OVERHEARD: "Yeah, she SURE looks like a witch, and when she walks into a room you expect her to ask, "Did you ring for BROOM service?" . . . . GOSSIP: TALLING the story . . . . LIMERICK DEPT.: Endeavored a lady in No. Dak. To snapshot a bear with a KODAK. The button she pressed—The bear did the rest—The lady stopped running in So. Dak. . . . MOTHER GOOSE REVISED: Sing a song of sixpence, A pocket full of dough. Looks like LOTS on pay day—But Whi-z-z-z! How it can go. . . . Just before ELECTION time is really the season of excess PROPHETS. . . . SQUATTER: A person who takes a LOT for granted. . . . SHAGGY-DAWG-STORY - OF - THE - MONTH: "And I have one brother who is really a rare individual," explained the college man to his new gal friend. "You do?" she queried. "And how is that?" "He has a stalk of rhubarb growing out of the top of his head." "My, that IS peculiar." "It SURE is. He PLANTED CELERY!" . . . . SODDEN THOUGHT: TWO can live as cheaply as ONE can play POKER. . . . DRIVE-IN THEATERS may have their disadvantages, but AT LEAST you don't have to worry about getting into the GUM under your SEAT. . . . COUNTERFEITER: A fellow who wants to MAKE money BAD. . . . SNICKER-SCOOP-OF-THE-MONTH: The story of a goose flying south for the winter who swooped down past a drive-in showing a horror movie, and was so frightened that it promptly developed PEOPLE-PIMPLES. . . . POOR MUSICIAN: One who's FLAT on his BACH. . . . Sign at TURN of NARROW mountain ROAD —S-s-s-s-s-ure you CAN!" . . . . PARTING THOUGHT: When NOBODY disagrees with you, you're either TERRIBLY BRILLIANT—or the BOSS. . . .

Your pun-peddler—DUFFY

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You "Live Better Electrically"

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Farm Better Electrically

Men, your topic will be: "The Equipment That Helps Me Most to Farm Better Electrically." But just don't list your equipment. We want a letter telling *how* your equipment helps you—how you decided on installing it, who helped in the planning, how you use it, how it helps you by saving labor, time and making more profit, etc.—the more complete your letter, the more chance of winning.

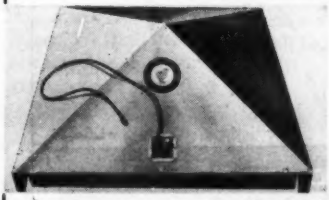
Live Better Electrically

Ladies, your topic is: "How My Family Lives Better Electrically." What we're looking for here is a letter telling how one appliance, or all your appliances, makes life easier, more comfortable and pleasant for you and your family.

Letters should be between 100 and 300 words in length, postmarked no later than March 15, 1961. Winners, as selected by our judges, will be announced in the July-August issue. Regular rates for editorial material will be paid for any other letters or portions thereof printed in the magazine. Decision of the judges is final, and all entries become the property of ELECTRICITY ON THE FARM.

Don't waste a minute! Sit right down and get your letter off to: Contest Editor, ELECTRICITY ON THE FARM, *2535 Layton Dr., Lithonia, Georgia.*

You Are Dollars Ahead When You Choose BAILEY *Electric* BROODERS



Check these features:

- Low initial cost lets you afford the BEST
- Low operating cost means larger PROFITS for you
- The utmost in brooding CONVENIENCE, SAFETY and DEPENDABILITY

Plus FREE with every Bailey Brooder you now get a one year insurance policy that protects you against chick losses resulting from off-farm power interruption.

We ship directly to you or deliver larger orders at your farm. Local bank financing available. Write us for further information or prices.

L. H. BAILEY & SONS

LI 3-5281 — 845 W. Broad Street, Athens, Georgia

Research Notes

By J. P. SCHAENZER

Development of egg-handling equipment to transfer eggs directly from the collection belt to a continuous-flow washer would allow one man to care for 16,800 birds in a 50-hour week.—UNIVERSITY OF MASSACHUSETTS, LEE H. SNYDER

Frozen green beans of initially high quality maintained good quality for about a year when held at 0°F.—WESTERN REGIONAL LABORATORY, ALBANY, CALIFORNIA

Average corn yields slightly above 100 bu. per acre can be obtained with irrigation under Iowa conditions. —IOWA STATE UNIV.

An experimental, electrically-powered, horizontal silo unloader is expected to automatically unload, convey and distribute 175 to 200 lbs. of corn, short grass or other silages per minute.—WASHINGTON STATE UNIV. AND USDA

On 50 dairy farms it was found that the total cost of cooling milk in bulk tanks averaged 26¢ per 100 lbs. for the 100-gal. tank and 9¢ per 100 lbs. for the 1000-gal. tank. —OKLAHOMA STATE UNIV.

An experimental vibrator seed cleaner separates crimson clover from curly dock; alfalfa from pigweed; beans from peas; timothy from hedge mustard and dog fennel; rye grass from sweet vernal; and bent grass from ripple seed plantain. —OREGON STATE COLL., JESSE E. HARMOND

In one of the largest and most modern poultry plants in Georgia, workers kill, eviscerate and pack 100 chickens a minute, or 50,000 a day. —USDA, AMS, ART SUSATT

To maintain top quality, eggs must be gathered at least twice a day, cooled rapidly to about 55°, and held at 80-85% relative humidity.—UNIV. OF CALIFORNIA, S. M. HENDERSON AND F. W. LORENZ

Four hundred beef cattle were fed and watered in 17 minutes per feeding during January, 1960—using a total of 484 KWHrs for silo unloading, mechanical bunk feeding, water pumping and electric heat to keep the tanks free of ice. —MICHIGAN STATE UNIV. & CONSUMERS POWER CO.

Well-packaged, ready-to-cook frozen ducks and geese can be stored safely up to one year at 0°F or below. —WESTERN REG. RES. LAB., ALBANY, CALIFORNIA

For young weaned pigs 4 to 9 weeks of age, no specific temperature is optimum in the range of 45° to 90° for either improved rate of gain or feed efficiency.—IOWA STATE UNIV., D. W. MANGOLD AND T. E. HAZEN

Researchers have developed a sand filtering system by which a farm pond water supply can be filtered satisfactorily and then made safe from bacteria contamination with a modern chlorination unit.—KANSAS STATE UNIV.

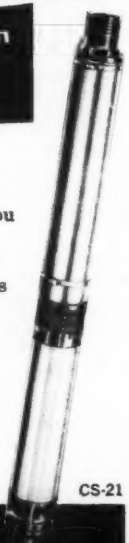
Wage earners worked only about ¾ as many hours in 1959 to pay for the market basket of farm foods as in 1947-49, although the dollar cost of these foods rose 11%.—USDA, AMS

Production ratios on irrigated vs. dry land averaged, over a period of 5 years, for durum wheat, 47 and 17 bu.; barley, 64 and 32 bu.; oats, 96 and 46 bu.; potatoes, 483 and 196 bu.; and corn silage, 15 and 4 tons per acre. —NORTH DAKOTA STATE COLL., H. M. OLSON AND GEORGE KAPUSTA

MORE WATER FOR LESS MONEY

With a RED JACKET Custom "Submerga" Pump

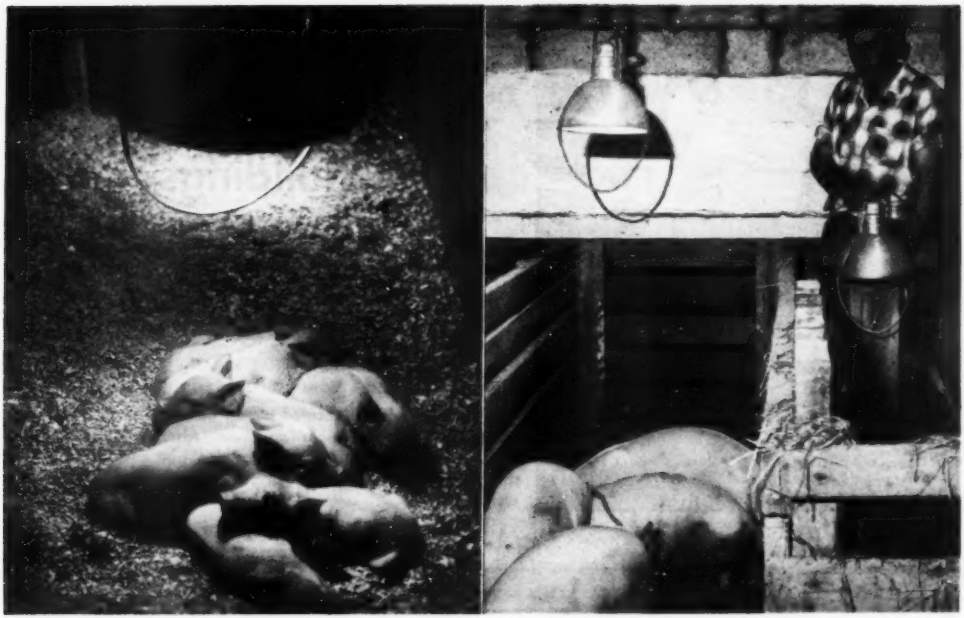
Buy your water system pump on capacity and pressure – not horsepower. You will find the Red Jacket Custom "Submerga" Pump gives you "more water for less money." Owners find they can get the water they need from smaller horsepower pumps to gain both big first savings and continued savings in electricity. Combine this high capacity with the proven dependability of Red Jacket "Submerga" Pumps and they are the biggest water system bargain you can get. Ask your Red Jacket dealer what size you need.



CS-21

RED JACKET WATER SERVICE PRODUCTS

RED JACKET MANUFACTURING CO.
Davenport, Iowa



Pigs huddle in the safety and warmth of 250-watt heat lamps that have helped Carter Elliott increase his average survival per litter from 5 to 9 pigs. Lamp is 20 inches above litter. Elliott uses lamps until pigs are two weeks old, longer if weather is cold. Walter Owens raises or removes lamps to keep them out of reach of pigs or sow as pigs grow older. Otherwise, lamps may be broken or wires chewed.

"We now raise 9 pigs per litter, Thanks to . . .

Heat Lamps and Farrowing Jackets

Three winters ago Carter Elliott of Lynchburg, Virginia, was suffering such heavy losses of young pigs that he thought seriously of quitting the hog business. Up to 50% of his pigs were dead within hours after birth, victims of chilling or mashing. He was raising an average of 5 pigs per litter.

Instead of abandoning the pig business, he changed his farrowing arrangement and added heat lamps. The result —last winter he averaged 9 pigs per litter.

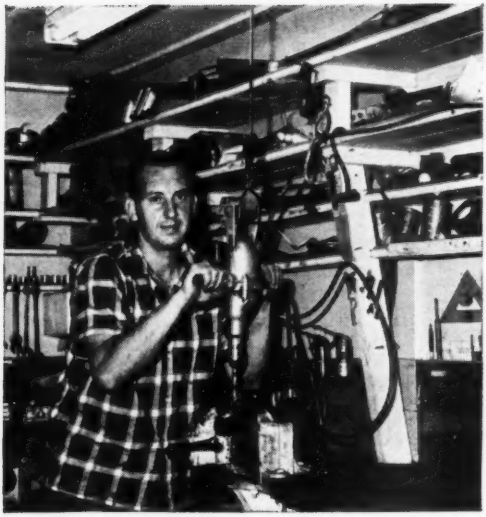
What Elliott did was to junk his old farrowing crates and build new pens inside a concrete block barn. There is a farrowing jacket for each sow with room on either side where the pigs are safe from mashing and are warmed by 250-watt heat lamps. Before the sow is expected to farrow, a lamp is located on either side of her and about 18 inches above the litter. Warmth from the lamps attracts the new-born pigs to safety.

Winter Litters Do Better

Walter E. Owens of Horseshoe, North Carolina, is equalling Elliott's mark of 9 pigs per litter with the same farrowing and brooding arrangement. He has been using heat lamps for eight years; says he saves a few more pigs in winter than in summer.

Owens observes that safety from mashing is a big factor in his success. Pigs leave the area warmed by the lamps just long enough to eat, then go right back, he says. For litter on a concrete floor, he uses straw in winter and shavings in summer with the lamps 20 inches above it.

"If pigs are not kept warm," he believes, "a lot of feed will go to maintain body temperature." □ □



Multi-purpose Farm Buildings?

Here's a combination shop-garage

Counterbalanced drill, located almost directly above vise, pulls down easily for use. After job is finished, drill is returned to original position. Baker used scrap metal for counterweights.

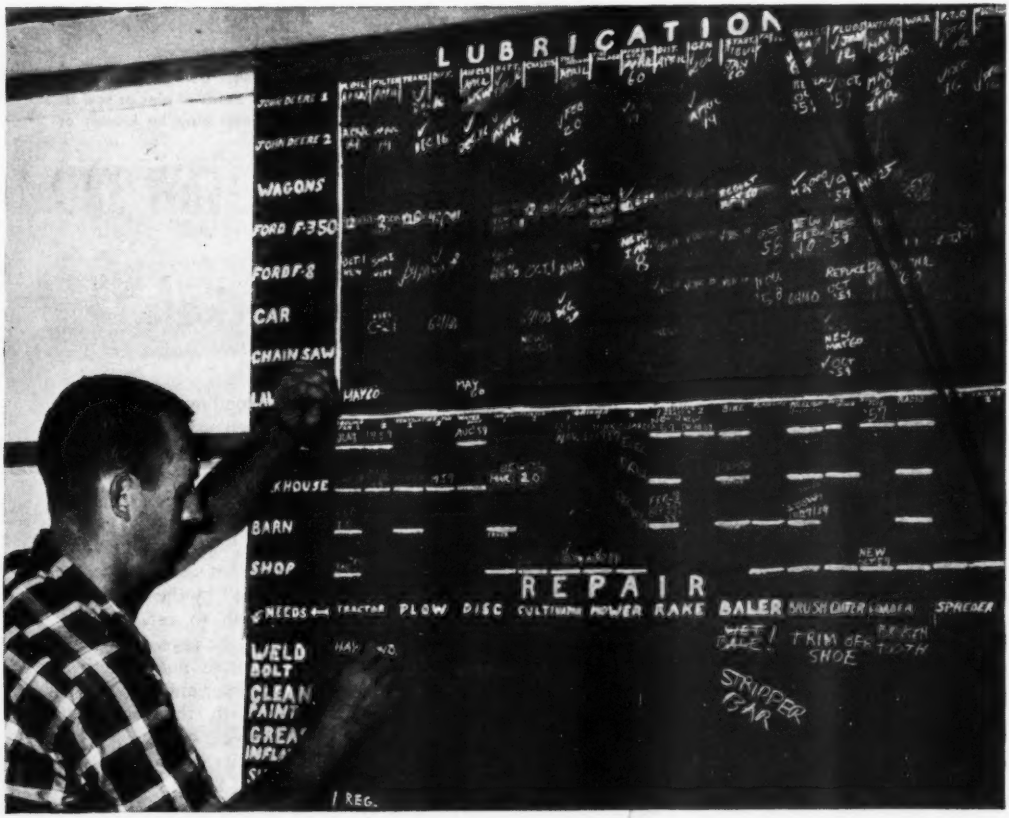


Chart on inside of door is used to keep maintenance records, indicate repairs that are needed, and show "want" list.

A two-car garage can make a mighty good farm shop building. Edwin C. Baker of Timberville, Virginia, is using his as a shop, and he finds there's plenty of open space left to house an automobile when the shop isn't being used.

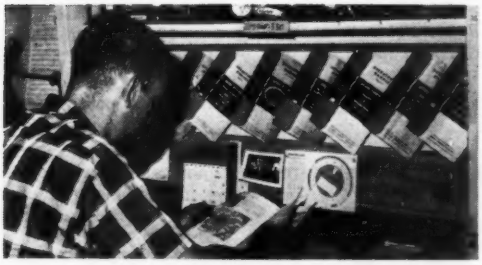
To make the garage fit his needs for a shop, Baker built wooden work benches along either side of the building. Beneath these benches are storage bins. On the walls above them and across the end of the garage are smaller storage shelves and racks.

The door was changed to open and close mechanically. It is hinged to open by lifting out and up, so that it serves as a shelter above the concrete apron in front of the garage. Fifty feet of 5-watt-per-ft. heating tape embedded in the concrete prevents accumulation of ice or snow that might interfere with opening the door or using the building.

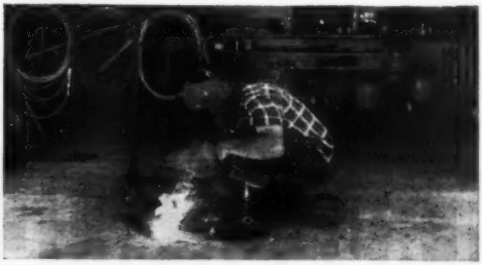
In establishing the shop, Baker also recognized the importance of good lighting. He has 2-tube, 96-in. fluorescent lamps above each work bench. When the door is opened, a 150-watt floodlamp mounted on its inside surface lights the work area underneath. He finds this area ideal for welding.

"We used to go to town for all our repairs," Baker recalls. "We had to tear down so many parts to get to the broken pieces. Now we can make many of these repairs right in place."

That's just one of the ways the shop saves him time—and money, too. □ □

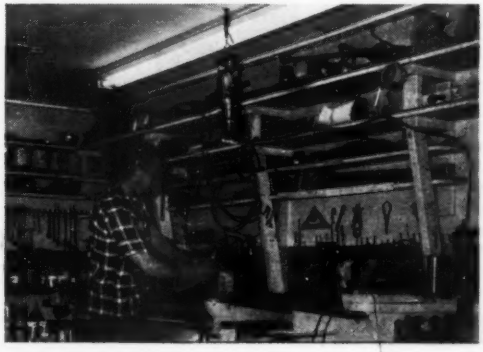


Operator's manuals for every piece of Baker's farm machinery are readily available at his desk in the shop. Reference to manuals enables him to do better job of keeping equipment in top condition.



Racks for air compressor and welder hoses are made from tire rims cut into three pieces. Rim sections are mounted on frame that swings for out-of-the-way storage or easy access of hoses.

Fluorescent lamps above work benches provide good lighting. Note ½-in. drill suspended above bench and the portable grinder with flexible shaft that Baker is using.



Baker's shop is in a building that once served as a two-car garage. Hinged door that opens up and out serves as shelter above concrete apron in front of garage.

What's New

Hog Farrowing Unit

The "Farro-Matic" combines galvanized-steel farrowing stall, sow feeder, automatic waterer and automatic manure disposal system in one ready-built unit. The feeder, waterer and manure removal system can also be adapted to other farrowing stalls.—National Farm Automation, Inc., R.R. #6, Lafayette, Ind.

Pipe-Thawing Bulletin

Equipment needed, instructions, and safety suggestions for thawing frozen water pipes with low voltage electricity are all covered in new bulletin EW 243, available free from Hobart Bros. Co., Troy, Ohio.

Poultry Housing Booklet

Houses and Equipment for Laying Hens (USDA Misc. Pub. No. 728) describes different types of loose-housing arrangements. Topics include insulation, ventilation, basic house design, building details, interior details, etc. 28 pages, 25¢ per copy from Supt. of Documents, Gov't. Printing Office, Washington 25, D. C.

All-Fiberglass Water Softener

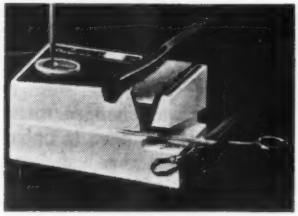
A lifetime guarantee on the mineral and brine tanks of the new "Pioneer" water softeners is made possible by their all-fiberglass construction. The fiberglass eliminates problem of leaks, corrosion and rust, while special brining system eliminates brine-tank cleanout chores. — Stover Water Softener Co., Dept. 11, St. Charles, Ill.

Stand-by Generator Booklet

Standby Electric Power Equipment for the Farm, USDA Leaflet No. 480, describes types of generators, how to determine size needed, how to wire generator into distribution system, how to operate, and other necessary information for generator use. Price: 5¢.—Supt. of Documents, Gov't. Printing Office, Washington 25, D.C.

Household Combination Sharpener

This all-in-one electric unit sharpens knives, scissors and pencils. Magnetic guides hold knife



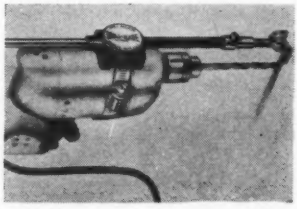
at correct sharpening angle, while shelf holds scissors at correct angle. One motor powers all three sharpening elements. — General Electric Co., 1285 Boston Ave., Bridgeport, Conn.

Wiring Textbook

Practical Electrical Wiring, by H. P. Richter, presents fundamentals, terminology, theory, practical wiring instructions, and on-the-job tips and short-cut suggestions. Thoroughly-rewritten 6th Edition complies with 1959 Edition of National Electrical Code. 592 pages, $7.95.—McGraw-Hill Book Co., Inc., 327 W. 41 St., New York 36, N. Y.

Drill Guide

This accessory guarantees that you will drill a straight hole in



any direction—horizontal, vertical, or at any angle you desire. The "drill-guide" can be attached to any portable electric drill, has graduated dials to regulate drilling "left and right" and "up and down."—Ames Precision Machine Works, Waltham, Mass.

FROZEN MILK
CAN COST YOU MONEY!

Avoid "Down-Grading" for Frozen Milk
Get Full Payment for Butterfat...

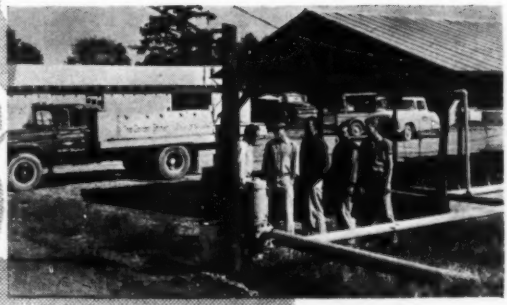
Send for this new folder "How To Select Your Bulk Milk Cooler" with a comparison of ice-bank and direct-expansion cooling.

With Dari-Kool's fast ice-water cooling your butterfat test will not be lowered by a *breakdown of the milk emulsion,' caused by freezing* — or by *churned milk, floating with butterballs, the result of slow cooling.* Both are common faults of many direct-expansion tanks. Both can lower milk quality and cost you money. To avoid frozen milk and be sure of an accurate butterfat test and full payment—get a DARI-KOOL.

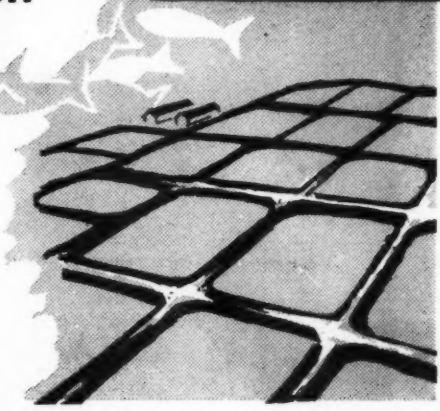
With Dari-Kool's fast ice-water cooling you can be sure that your milk will more than meet the new 3A Cooling Regulations — now in effect.

Write Dept. 4 for FREE Catalog • DAIRY EQUIPMENT CO., Madison, Wisconsin

They Farm For Fishermen



Electric turbine pumps are important to minnow farming. Ponds get a change of water after each brood of fish.



Minnow ponds trace a mosaic aerial view. Each large pond covers about ¾ of an acre.

Instead of plowing the "back forty" to get ready for a new crop, some Mangham, Louisiana farmers turn on three 7½ hp electric turbine pumps.

Actually, instead of growing crops, Bayou Fisheries, Inc., grows fish to feed other fish. An old 140-acre farm, long out of crop production, has been converted into a minnow farm —for growing fish bait. The "plowing" consists of draining the ¾-acre ponds after each crop of minnows, allowing air and sunlight to dry them out, then pumping them full of fresh water.

100 Ponds on the Farm

There are 100 ponds on the farm. A. E. Hughes, partner-manager, says each pond produces 700-800 lbs. of fish a year.

"All the wells are interconnected, so we can get lots of water into one place when needed. We used 4 and 6-inch asphalt-impregnated pipe for the distribution system. We've got the ponds fixed so they overflow into a central canal that drains into a nearby bayou when we get heavy rains," Hughes says.

Parent fish lay eggs in 14 small brood ponds, on a mat of Spanish moss. After spawning, the mat, covered with eggs, is moved to the larger ¾-acre ponds for hatching. Spawning begins about the first of April and continues for three months.

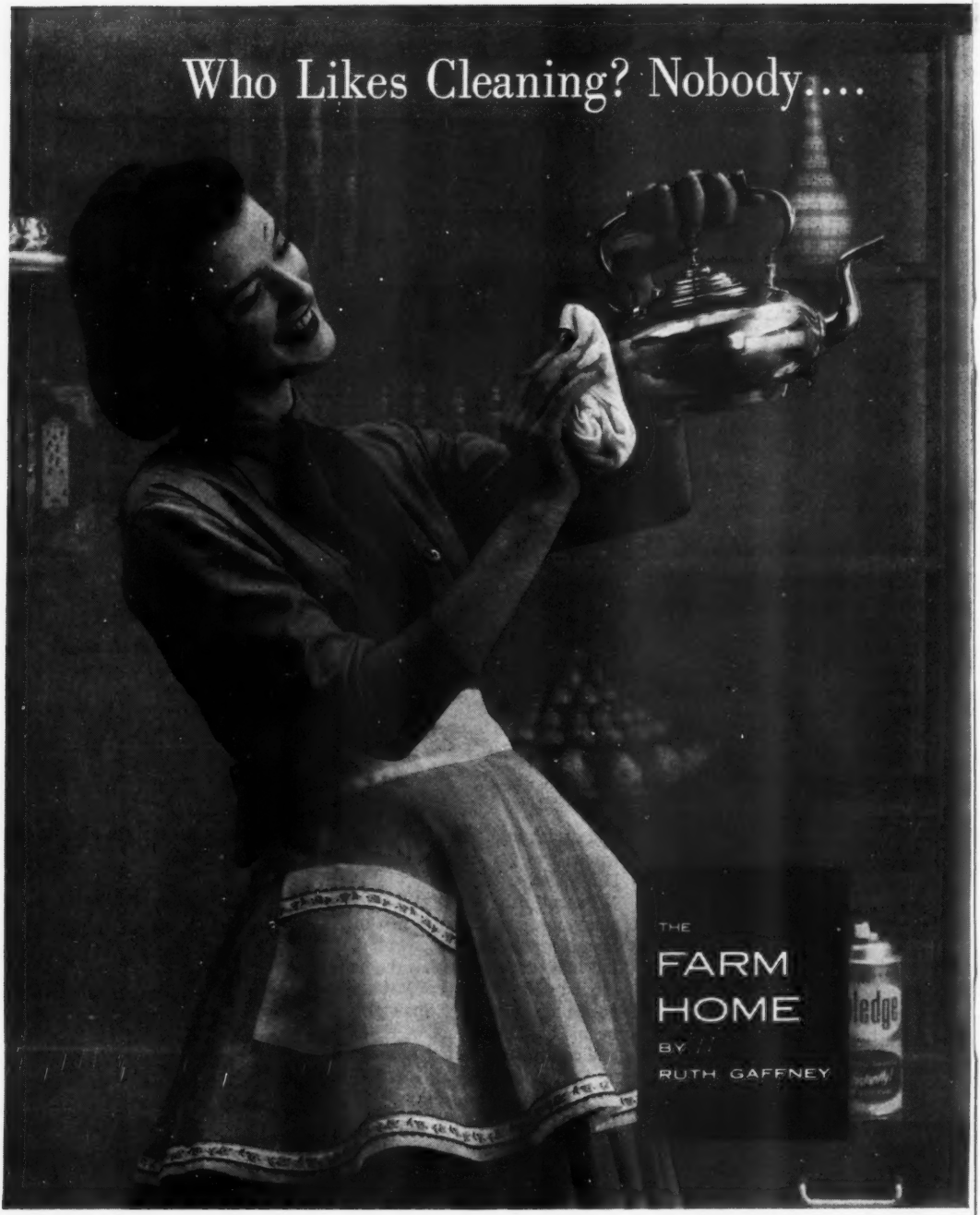
Vary Size of Fish

Growth rate of the minnows is controlled by varying the amount of space given them in the pond. By thinning out or crowding a pond, they can grow whatever size minnow the market demands. Hughes says the most popular size is when 1000 minnows weigh about 4 lbs.

Death Loss Almost Zero

Before minnows are shipped to retail bait dealers, they are netted from the ponds and dumped into 16 concrete vats for grading and preparation for shipment. Two small electric motors and pumps aerate each vat. Death loss is practically zero, both in the large ponds and in the vats.

At each of the four well sites, a 340-watt streetlight fixture is mounted on the meter pole. The lights deter predatory animals and allow workmen to perform after-dark duties around the wells. □ □



There's satisfaction in seeing our home sparkle and shine. Good-method hint: after polishing her copper kettle, this homemaker is rubbing on a thin coat of wax to make the shine last longer.

well, almost nobody!

The winner, of course, is the homemaker with a "plan." Here's a story about how you can be a winner, too.

FEW HOMEMAKERS will answer "yes" to the question, "do you like to clean?" The reasons are simple: it seems to be a never-ending job—clean today, and tomorrow it has to be done all over again. It's tiring and it's monotonous.

Women who do like to clean seem to have acquired a point of view about it. They keep their attention concentrated on the *rewards,* that is, an orderly house, everything in its place, more healthful living, and less fatigue. They have good standards and enjoy trying to meet them. In order to do this, they have worked out a schedule which carries them through a day, a week, a month, or a year of maintaining their home.

These model homemakers are not slaves to their schedules but they have learned from experience that use of common sense and learning the best methods have saved their dispositions as well as their backs.

Every household is different, of course, and in trying to work out your own plan you might first consider the tools you have to work with. Type of cleaning aids you use will depend upon what you have to clean. As you move from room to room, take your supplies with you in a basket or box to save steps. Don't be afraid to try new cleaning aids but at the same time, stick with the ones you like.

Here are suggestions for a simple house cleaning routine. Discuss it with members of your family and perhaps some of the responsibilities can be divided among you. The important thing is to have a plan to fit your needs and follow it with regularity.

Start with first things first:

For example: in the weekly cleaning of the living room, you clean ashes out of the fireplace before you start to vacuum. In the bedroom you make the bed so that any lint from the bedding falls to the rug before, and not after, you vacuum the rug.

Make little ones out of big ones:

By following the daily cleaning plan suggested here, your weekly house cleaning will be easier. Use of the daily and weekly house cleaning schedule will entirely eliminate the need for major seasonal house cleanings.

IN THE LIVING ROOM

Daily

Empty wastepaper baskets and ash trays, discard newspapers
Wipe off and rearrange tables, desk, mantel top, bookcases
Vacuum upholstery if necessary
Go over rugs lightly with vacuum or carpet sweeper
Adjust window and lamp shades, slipcovers and pillows

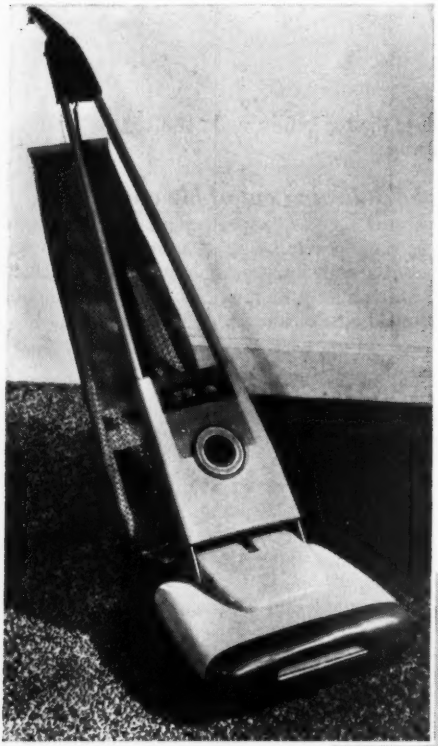
Weekly

Clear room of week's accumulation of magazines and other papers
Clean ashes out of fireplace
Open windows
Vacuum moldings, walls, doors, draperies and light fixtures
Clean vases, mirrors, light bulbs, lamp reflectors, etc.
Vacuum upholstery, lamp shades, bookshelves, venetian blinds
Vacuum, then polish wood furniture, tables and chairs
Vacuum bare floors, baseboards. Wax, polish or buff floors as needed
Vacuum rugs thoroughly
Return room to order

(*Please Turn page*)

Who likes cleaning...?

This wise homemaker lets her vacuum cleaner do her dusting. So much better than a dust cloth which usually moves the dust from one place to another. Attachments for this swivel-top cleaner include tools for cleaning rugs, floors, and upholstery.



An upright-type vacuum cleaner is ideal for cleaning a large amount of carpet. This one glides conveniently under low pieces of furniture. Easy to store because it hangs by the handle on a hook.

This small hand vacuum does an excellent cleaning job and is handy to use in conjunction with an upright. Good for cleaning carpeting on stairs, draperies, furniture upholstery. Even cleans interior of the family car!

DINING ROOM

Daily

Clear away dishes
Wipe off polished surfaces of tables, chairs, etc.
Vacuum bare floors, if necessary
Vacuum rugs lightly after each meal, or use carpet sweeper
Return room to order

Weekly

Follow daily procedure, plus:
Wipe off and polish wood surfaces of tables, etc.
Vacuum molding, walls, doors, shelves, curtains
Vacuum upholstered chairs
Vacuum baseboards and bare floors
Vacuum rug thoroughly
Return room to order

BEDROOM

Daily

Turn back bedcovers on arising
Place laundry in hamper
Air room
Make bed
Wipe off polished surfaces
Go over rug lightly with vacuum or carpet sweeper
Return room to order

Weekly

Follow daily routine, plus:
Change bedcovering
Clean closets, shelves and floor
Replace any fresh linens on tables or dressers
Vacuum rug thoroughly
Return room to order

KITCHEN

Daily

Put away food
Wash dishes
Clean sink and work surfaces
Wipe off range, refrigerator
Clean floor

Weekly

Follow daily routine, plus:
Remove food from refrigerator, defrost, clean interior, replace food
Clean oven, heating units and range surface
Clean out breadbox, food containers
Wash work surfaces
Wipe off woodwork
Scour garbage container
Vacuum ceilings, walls, curtains, etc.
Clean floor

BATH

Daily

Air room
Wipe up water spots from floor
Clean and wipe dry the basin, bathtub, mirror and tile walls
Put medicine chest, shelves, sink top, etc., in order
Replace towels

Weekly

Follow daily routine, plus:
Clean light fixtures, shelves, etc.
Wash curtains, if necessary
Clean and wax floor

HALL AND ENTRANCE

Daily

Vacuum rug daily to prevent excessive wear

Weekly

Vacuum stair carpet and bare wood floors, banisters, etc.
Vacuum rug thoroughly

Smart ideas for vacuum cleaner users:

• Suction of any type vacuum cleaner depends greatly on how clean the bag is. If necessary, turn bag inside out and brush thoroughly. Never wash bag.

• Slower an upright vacuum cleaner is operated, faster and more efficient cleaning job it will do. Canister or tank-type cleaner should be operated faster than an upright and with twice as many strokes.

• For best results with any type vacuum cleaner, work in direction of the rug pile, not across the grain.

• To eliminate wheel marks or foot prints when cleaning, start in the corner of the room farthest from the door and work backward toward door.

• A few "do's" and "don'ts": wind cord loosely when storing cleaner. Avoid running cleaner over cord, or stepping on it, and keep cord free of knots and kinks. Disconnect cord by grasping plug at outlet, rather than pulling the cord.

BUY THE HYDRANT
THAT *DEFINITELY*
WILL NOT FREEZE

Vari-Flo Model F-55—¾" size. Cam-Lock Model B-56—1" size. Bury Depth — 2, 3, 4, 5 or 6 ft., depending on frost level in your area.

See your well driller, plumbing, water systems, or hardware dealer — or write us direct!

The Columbiana Pump Co.
RAILROAD STREET
COLUMBIANA, OHIO.

LIVE BETTER
ELECTRICALLY

Enjoy crystal-clear water
AUTOMATICALLY!

DIAMOND's amazing 3-way conditioning action filters, softens, removes iron from water in one operation. All automatic. Needs only salt refill. Enjoy refreshingly pure, clear water that produces cleaner washes, prolongs clothes life, cuts costly plumbing repairs. Four sizes, 8 capacities. Write:

DIAMOND
OSHKOSH FILTER & SOFTENER COMPANY
Oshkosh, Wisconsin

Tasty Dishes Made With Maple Syrup

Pretty soon we'll be buying this year's yield of maple syrup. There's nothing better for pancakes and waffles, of course, but have you tried this delicious product to give unusual flavor to desserts and nourishing drinks? We are sure you and your family will like our suggestions for a pie and cookies.

If you'd like additional recipes, write to the New Hampshire Maple Producers Association, Inc., Concord, New Hampshire.

Maple Pumpkin or Squash Pie

1 cup pumpkin or squash, pureed
1 tablespoon cornstarch
½ teaspoon cinnamon
½ teaspoon nutmeg
¼ teaspoon salt
1½ cups maple syrup
½ cup milk
⅓ cup sugar
1 tablespoon butter, melted
2 eggs beaten

Beat pumpkin or squash smooth. Sift into this mixture, cornstarch, cinnamon, nutmeg, sugar, and salt. Mix thoroughly. Add melted butter, milk and maple syrup and mix. Stir beaten eggs into the filling. Pour into 9-inch pie shell and bake 15 minutes at 450° F. and then lower to 325° F. Continue baking for 40 minutes or until done.

Maple Syrup Cookies

½ cup maple syrup
3 tablespoons butter
1 egg beaten
½ teaspoon baking soda
2 tablespoons milk
1 cup flour
1 teaspoon cream of tartar
¾ cup chopped nuts

Melt butter and add maple syrup, beaten egg, and milk. Sift baking soda, flour, and cream of tartar into maple syrup mixture and mix thoroughly. Add chopped nuts. Drop onto a greased cookie sheet and bake in a preheated 400° F. oven for 10 minutes. Makes about 2 dozen cookies.

LAUNDRY FORECAST:

Whiter and Brighter Clothes

If the towels, sheets, pillowcases, and other items in your laundry basket have become grey and dingy looking, it is possible to restore their like-new whiteness. As you are no doubt aware, some finishes now used on clothing will absorb chlorine bleach and cause yellowing which will not wash out. Sort out these items and follow the "recipe" given here for a brighter and whiter wash:

1. Use half again to twice as much heavy-duty laundry detergent as you normally use in hot water.
2. Add the recommended amount of diluted chlorine bleach for your type of washer.
3. Allow washer to agitate for five minutes.
4. Stop washer and allow articles to soak for one-half to one hour.
5. Re-start washer; set for a three- to five-minute wash and allow to complete cycle.

If the items have not been returned to their original whiteness, it may be necessary to repeat the above.

Although modern synthetic detergents do not form a curd in hard water as natural soap does, their effectiveness is reduced by water hardness. Therefore, if you live in a hard-water area, it may be necessary to increase the amount of synthetic detergent you normally use in order to maintain the original whiteness of your white launderable articles.

Periodic bleaching with a chlorine bleach or consistant use of a powder (oxygen) bleach will also aid in the results which every homemaker wants—white and bright laundry.

Stains are a problem for every home launderer. They should be removed as quickly as possible after they occur and before you forget what caused them. Consult the instruction booklet furnished with your washer for the best directions for handling the removal of various types of stains.

Pre-treatment will prevent many stains from becoming permanently set in the garment. Stubborn stains, such as mildew and scorch, often respond to the type of formula suggested above for removing tattle-tale grey. □ □

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1 gal. size 5 qt. cap. **$27.95**

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- Fully guaranteed by the Originators of Home Milk Pasteurizers.

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- Popular 30 and 36 inch sizes!
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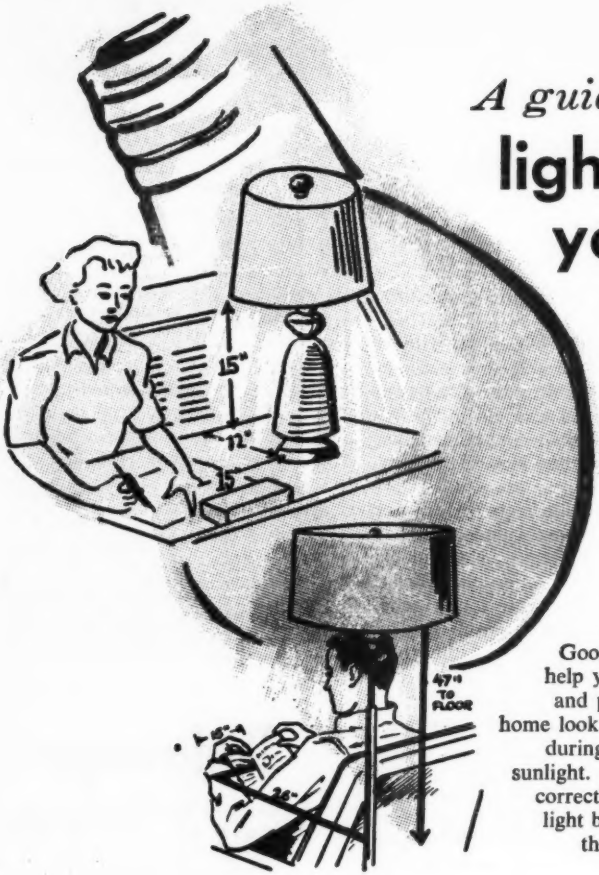


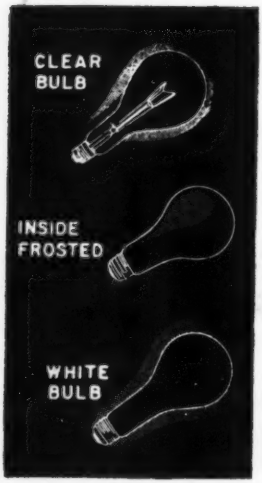
A guide to . . .

lighting your home

PART V by A. V. KREWATCH

BULB BUSINESS

About 90 percent of what you learn comes through your eyes. We all learn by seeing, and seeing is the only reason for lighting. Electric lamps give us a powerful source of light, yet we often misuse it, and overwork our eyes. Did you ever notice that when your eyes are tired, you are tired too? That's why we need to understand light and how to use it. Good lighting is important in your home to help your family see to work well, and to read and play. It is also important in making your home look as cheerful and pretty at night as it does during the daytime when rooms are filled with sunlight. But before you can use lighting equipment correctly you need to know something about the light bulbs that furnish the light. It is important that you use the right one in the right place.



. . . Use me right and I'll give good light

Let's start off our "Bulb Business" by looking at a clear light bulb. We don't use these clear ones very often any more, but if we look at a clear bulb we can see the parts of the light bulb. It is made of three main parts: a glass bulb, a metal base, and a finely coiled wire. As the electricity passes through the wire, it becomes so hot that it glows brightly and gives light. That is the way every incandescent light bulb "lights" regardless of its finish, size, or shape. Light a clear bulb, and see how uncomfortable it is to look directly at this bright bulb. This is why we don't use them in our homes today.

The inside-frosted bulb was developed to reduce the glare of the clear bulb. If you light an inside-frosted bulb you'll notice that the glare is less than that of the clear bulb, but there is still a bright spot on the bulb near the center.

One of the newest finishes is the white coating on the inside of the bulb. By lighting the white bulb, you'll see that light is spread over the entire bulb surface. The bright spot near the center has disappeared. In any case the same amount of light is given off by each type bulb of the same wattage—clear, inside frosted or white.

. . . Get rid of glare! Don't leave me bare

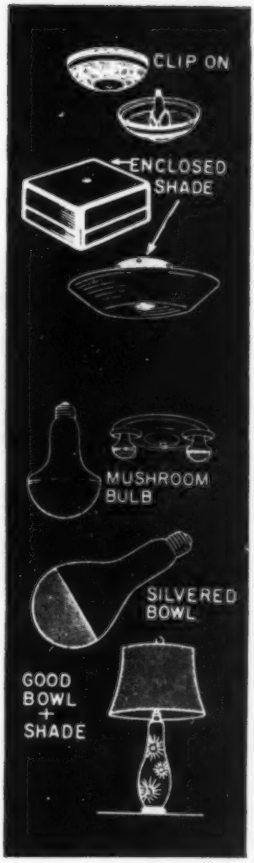
A bare lamp bulb hanging in a living room, kitchen, or other part of the house will give glaring light. This light causes eye strain, headaches, and tired eyes. The answer to this problem is to get rid of the glare. In its place, choose a lamp or fixture that will furnish more comfortable lighting. Attractive bulbs and shades can be bought at a low price. *Here are four inexpensive ways to "get rid of glare."*

(1) *Use Shades on Fixtures*—The simplest and least expensive shade is the "clip-on." Most "clip-ons" are made of plastic in a variety of wide, shallow, new designs. No wiring is necessary, they just clip on the light bulb. There should be at least ½″ to ¾″ clearance between bulb and diffuser to avoid "hot spots." They must be kept clean. Most reduce light. In kitchens we prefer an enclosing globe that can be wiped clean quickly. A closed fixture may be round or square.

(2) *Change The Bulb.*—The mushroom bulb has a light-colored enamel coating on the bowl end to reduce glare. Burn this bulb in a base-up position either in close-to-ceiling fixtures as shown in the picture or in the drop cord type lighting in your home. These bulbs are basically decorative.

(3) *Try Indirect Light*—The silver-tip bulb has a coating of mirrored silver on the bowl. This silver tip directs all the light upward. This bulb is good in the drop cord type of lighting that is used in many homes and farm buildings. A white ceiling will help reflect the light downward or reflectors may be bought for this bulb which help spread the light over a work bench or other lighted area.

(4) *Choose a Good Lamp Shade*—A good lamp must have a good shade, so use a shade that has a reasonably wide opening at the top. It should be of suitable material to transmit light without letting the bulb show through. If it is made of dense material, it should have a white lining on the inside. Always remove cellophane paper from shades. Minimum diameter at the bottom should be 16″ for table lamps and 18″ for floor lamps.



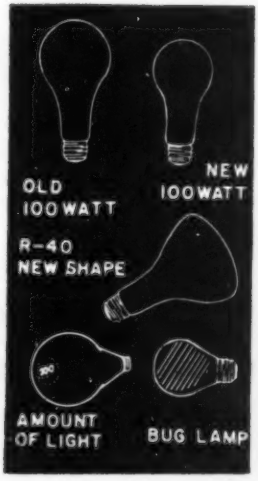
. . . Look at my size and shape

Smaller Sizes—The physical size of regular bulbs is being reduced while the watt size remains the same. For this reason, there are many places where the new smaller 100-watt bulb can be used that the larger bulb would not fit.

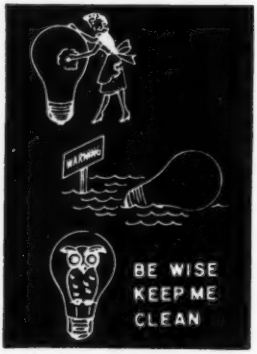
Improved Shapes—A new shape bulb is now available for reading and study. It diffuses light and you do not need a diffusing bowl with it. It is known as an R-40 and has the shape of a floodlight or heat lamp. You use this white indirect bulb in an upright position, with a wide harp and good shade.

Amount of Light—You can identify the watt size by the number of watts printed on the bowl end of the bulb. For most home lighting purposes, at least 100 watt bulbs are needed. For reading and study, a 150 watt bulb is better.

A Special Bulb For a Special Purpose—For instance "Bug-A-Way" bulbs have a deep yellow finish. These are used out-of-doors on summer evenings because most flying insects are unable to see yellow light. The yellow shields out most of the blue light rays, therefore insects are not attracted to it as much. Eventually some will be attracted because of the heat generated. *(please turn page)*



A guide to lighting your home continued . . .



. . . Keep me clean, so my light can be seen

You'll get 20 to 25 per cent more light if your bulbs, lamps, and shades are kept clean.

But don't dunk light bulbs! The base is cemented to the glass and if the cement gets wet, the glass and base may part company. First, make sure the bulb is cool, then just wipe with a damp, soapy cloth, remove suds and dry thoroughly.

Eyesight is Priceless But Good Light is Low Cost. When a light bulb becomes black on the inside, there is nothing you can do to clean it. The blackening absorbs a lot of light, but it still can be useful. So be a wise old owl and move these bulbs from the more important places to your halls, closets, or basements, or replace them with new, clean bulbs.

How does your home score?

(BE THOROUGH—BE CRITICAL—BE HONEST)

Points	Your Score	
25	_____	**1.** Do you clean all your bulbs, shades, and lamps in the way suggested. Your lighting equipment should be cleaned at least once a month. Remember, clean lighting equipment gives more light.
10	A_____	**2.** Check your lamp shades for: (A) White linings or material that transmits light, (B) Cellophane paper removed.
10	B_____	
15	_____	**3.** Check to see if there are any darkened bulbs in your lamps or lighting fixtures. If so, move these darkened bulbs to a hall, closet, basement, porch, or discard.
15	_____	**4.** Be sure at least 100 watt bulbs are used for most home lighting needs. (Reading, study, sewing, etc.) 150 watts is a better choice.
25	_____	**5.** Remove glare by either replacing bare bulbs overhead by decorator bulbs, or buy a clip-on shade to use on the bare bulb, or replace fixture.
100	_____	Total

Here you have an opportunity, if your score is low, to make a worthwhile contribution to good seeing. Reduction of eye strain, a cheerful and pretty home with good lighting, is important to happy family living.

Mrs. Nicholson knows she has plenty of hot water at her fingertips for every need. Her water heater is located right next to the washer.

Plenty of Hot Water

Hot water is another of those conveniences that we take for granted in today's homes.

When the T. E. Nicholsons built their new home near Inman, South Carolina, their planning included a hot water heater with capacity adequate for all of their household needs. It is a 40-gallon quick-recovery electric unit.

The prime test for it, Mrs. Nicholson says, came several months ago when she did six automatic washer-loads of clothes in succession. While the clothes were washing, she was using hot water for preparing and canning vegetables. And, each member of the family had a bath.

There was no shortage of hot water that day, and there hasn't been one in the Nicholson home since they installed the new water heater. It is located in the basement, beside the automatic washer and almost directly underneath the kitchen sink. It also is close to the bathroom. This means hot water is available at all points with little wasted heat.

Electric water heaters are especially suited to such convenient arrangement because they are flameless and they do not give off any heat. The quick-recovery units, available in table-top models too, have much larger heating elements (usually 4500 watts) than the conventional electric heaters which they are destined to replace. Therefore, they heat water much faster.

Some owners are having the quick recovery heating elements installed in their present water heaters. If you plan to do this, it is a good idea to consult your power supplier. You may have to extend a larger size wire to the water heater and use a larger fuse or circuit breaker to take care of the additional electrical load.

If you have long lengths of hot water pipe, there is a good chance it will pay you to insulate them. For example, if you have a 20-ft. line of ½-inch pipe from which 15 draws are made per day, it is estimated that you can save an average of 123 gallons of water and 30 kwhrs. per month by insulating. □ □

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A size for every need — a price for every budget.

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Brown House Rd., Stamford, Conn.

IT PAYS TO . . .

Receiving $400 scholarship awards from Westinghouse Broadcasting Co. president Donald H. McGannon are (l-r): Donnie Yoest, Joseph A. Winkler, Clifford F. Aggen, Carl Richard Panesi, Rosellyn Phillips, McGannon, and Harry McVicker.

Here are the National 4-H Electric Winners

Six talented participants in the 4-H Electric Program have been named national winners and awarded $400 college scholarships donated by the Westinghouse Educational Foundation. They are:

- Clifford F. Aggen, 17, of Camarillo, California, has designed complex electrical work for his father's new mushroom-growing facility. Included are electrically regulated vents that automatically control temperature and humidity, and a burglar alarm system. Clifford has also built an amplifier, several radios, an oscilloscope, and an electric pump.
- Carl Richard "Ricky" Panesi, 18, of Littleton, Colorado, has prepared what is known as a traveling arc, using a 9000-volt transformer to produce the electric arc. His exhibit on outdoor lighting won him a blue ribbon at both the county and district levels.
- Rosellyn Phillips, 18, of Hazleton, Indiana, has combined electrical skills with the jeweler's art. She built a "4-H Gemester" for cutting, grinding and polishing stones, driven by an old washing machine motor. Next she built a "Lapidaire" machine to prepare faceted stones or gems and also make and finish mountings and settings for jewelry.
- Joseph A. "Butch" Winkler, III, 18, of Hammond, Louisiana, has a knack for developing handy gadgets. He built an electric shoe polisher from a 1928 mayonnaise mixer, a hot-dog roaster, and an electromagnetic "pin picker-upper." He built a psychological testing device to determine brain impairment, and a model heart-lung apparatus.
- Donnie Yoest, 19, of Tipton, Missouri, estimates he has saved hundreds of dollars by helping wire barns, repairing electrical equipment, and undertaking projects such as building a heater for hog waterers. He turned a concrete feedlot into a 4-H square dancing area with loudspeakers and floodlights.

■ Harry McVicker, 16, of Van Buren, New York, bounced signals with his radio equipment off our "Echo I" satellite during its first week in orbit and communicated with another "ham" radio operator in Puerto Rico. His projects range from a small television high-pass filter to a radio transmitter with 900 parts.

4-H Electric Program Winners—1960

Alabama	Tommy Smith	Bowdon
Arizona	David Bone	McNeal
Arkansas	David Newman	Alma
California	Clifford Aggen	Camarillo
Colorado	Ricky Panesi	Littleton
Delaware	Howard R. Layton	Georgetown
Florida	John Edgar Smith	Umatilla
Georgia	James B. Davis	Doerun
Hawaii	Kent Richard Carlson	Wailuku
Idaho	Carl G. Johnson	Blackfoot
Illinois	Ronald L. Gehrig	Wyoming
Indiana	Rosellyn Phillips	Hazleton
Iowa	Jacob M. Vincent	Russell
Kansas	James R. Cormode	Lancaster
Kentucky	Bill Hartmann	Louisville
Louisiana	Joe A. "Butch" Winkler, III	Hammond
Maine	Ernest Sanborn	Bucksport
Maryland	John Edward Howard	Port Republic
Massachusetts	John E. Austin, Jr.	Fitchburg
Michigan	Truman Surbrook	Rives Junction
Minnesota	Rallah C. Madison (Boy)	Lismore
Mississippi	Martha Gray	Dorsey
Missouri	Donnie Yoest	Tipton
Montana	Jim Allen	Livingston
Nebraska	Gary Thayer	Grant
Nevada	Robert Hussey	Yerington
N. Hampshire	Frank Jolly, Jr.	Portsmouth
New Jersey	James Pankovics	Trenton
New Mexico	Loren Toombs	Pep
New York	Harry McVicker	Van Buren
N. Carolina	Clement Lucas, Jr.	Lucama
N. Dakota	Stephen L. Mutchler	Aneta
Ohio	James H. Hobbs	Lancaster
Oklahoma	DeLayne Smith	Elmore City
Oregon	Kenneth Bock	Astoria
Pennsylvania	H. Duane Norman	Liberty
S. Carolina	Marshall Ridelhoover	Bradley
S. Dakota	Larry Pressler	Humboldt
Tennessee	Bessie Lee Sanford	Murfreesboro
Texas	Lester Kuperman	Breckenridge
Utah	Joseph A. Parent, III	Clearfield
Vermont	George A. Taylor	Hancock
Virginia	Spencer Givens, III	Richmond
Washington	Larry Reeker	Ephrata
W. Virginia	Lawrence Richard Sulak	Wellsburg
Wisconsin	Laurence D. Stephen	Viroqua
Wyoming	Alan Whitney	Cheyenne
Puerto Rico	*Joel Ruiz	Anasco

* $100 U. S. Savings Bond instead of Trip to Club Congress.

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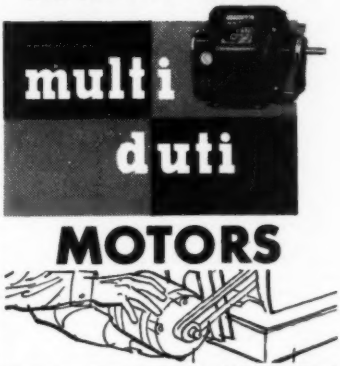

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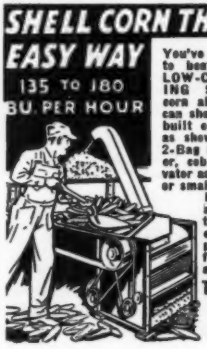
135 TO 180 BU. PER HOUR



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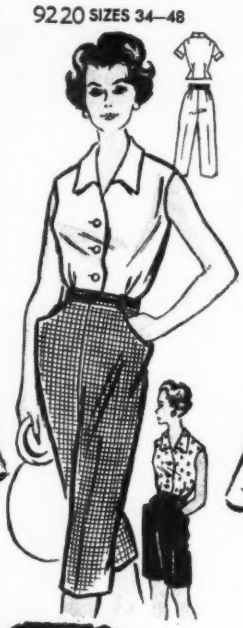
9220—Complete sports wardrobe for larger figures. Printed Pattern includes shirt, pedal pushers, slacks, shorts. Women's Sizes 34-48. See pattern for yardages. 35¢

9138—Nipped midriff, wide collar, full-gathered skirt—just what daughter ordered. Printed Pattern in Girls' Sizes 6, 8, 10, 12, 14. Size 10 takes 3⅞ yards 35-inch fabric. 35¢

4898—Slim sheath becomes a smart travel outfit when you add the jacket. Printed Pattern in Half Sizes 14½-24½. Size 16 dress, jacket bands take 3¼ yards 35-inch fabric; jacket 1⅜ yards. 35¢



Fashion Catalog shows 100 styles to sew. 35¢

4593—Styled to slim and cut for easy sewing—no waist seams. Printed Pattern in Half Sizes 14½-24½. Size 16½ takes 4⅛ yards 35-inch fabric. 35¢

9381—Basic sheath to wear around the clock. Note smartly seamed bodice, tabbed pockets. Printed Pattern in Misses' Sizes 12-20. Size 16 takes 3¼ yards 35-inch fabric. 35¢

9290—Half-size casual with tab-button neckline, easy six-gore skirt. Printed Pattern in Sizes 14½-24½. Size 16½ takes 3⅝ yards 35-inch fabric. 50¢

4561—Simple sundress topped by curvy bolero. Printed Pattern in Misses' Sizes 12-20. Size 16 outfit requires 5½ yards 35-inch fabric. 35¢

PATTERN 9290 is FIFTY CENTS. PATTERNS 9220, 9138, 4898, 4593, 9381, 4561 are THIRTY-FIVE CENTS each. Add 10¢ each for first-class mailing. Send 35¢ for new Fashion Catalog. Send orders (with coin) to:

ELECTRICITY ON THE FARM
Pattern Department, P. O. Box 122,
Old Chelsea Station, New York 11, N. Y.

Time clock is used to automatically start generators for 30 minute exercise run each week. The transfer switch is mechanically and electrically interlocked to prevent feed back into power lines.

Standby Generator Plants Insure

Uninterrupted Power for Hatcheries

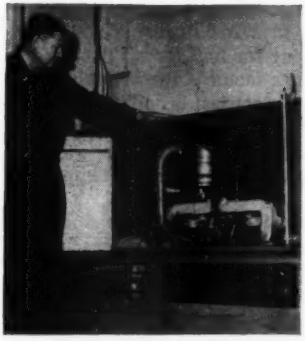
Standby generators provide an auxiliary power source for farmers who cannot afford to take a chance on ever being without electric power—farmers like John Bagwell Jr. of Empire, Alabama, who has been growing in the poultry business since 1944. That year he started a hatchery with capacity of 17,640 eggs. Like the poultry business in the Southeast, he has grown by leaps and bounds until his capacity now is 700,000 eggs.

This means that he may have up to $50,000 worth of eggs in his hatchery at one time. Once the eggs go into the hatchers, he says that a power interruption of longer than two or three minutes is very damaging.

That is where his two standby generators, 25 and 35 kw units, fit into the picture. Insurance, he calls them. They are connected to come on automatically within four or five seconds after any interruption in the normal power supply.

The transfer switch is mechanically and electrically interlocked to prevent feed back into power lines. A 7-day time clock on each generator automatically starts the engines once a week. They are allowed a 30 minute "exercise," thereby keeping them in shape.

Standby units are available in different sizes to fit farm needs.



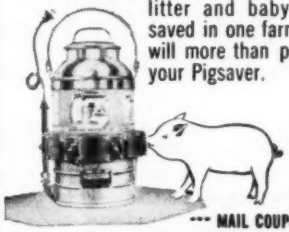
Standby generator, one of two units used by John Bagwell Jr. as auxiliary power source for his 700,000 egg hatchery.

NOW you can get
3 litters a year
from every sow..

with the NORWOOD ELECTRIC Pigsaver

Put your baby pigs on the Pigsaver right after farrowing. They'll get warm sow's milk replacer day and night. Thermostat control keeps milk at right temperature. Milk kettle feeds up to 8 pigs.

Then dry up your sow. She'll be ready to breed again in 30 days. The extra litter and baby pigs saved in one farrowing, will more than pay for your Pigsaver.



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Please send Pigsaver literature and prices.
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Name_____
Address_____
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get details on the...
WRITE FOR FREE PICTURES & PLANS
Silo-Matic® UNLOADER and HOW TO FEED MECHANICALLY
SAVE TIME & LABOR MAKE MONEY
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Van Dusen & Co., Inc., Wayzata, Minn.

Metal flaps are sometimes lowered by Miller to hold heat under hover. With very young birds, however, he leaves flaps up and moves hover closer to litter to conserve heat.

Electric hovers provide . . .

Better Broiler Brooding

One year ago, A. Vernon Miller of Fentress, Virginia, was beginning his first experience with electric chick brooding. Since then he has marketed four groups of broilers from a 5000-capacity house, and he has extended electric brooding to other houses on his farm.

Accurate cost figures kept on the first three broods show that Miller used 1945, 371 and 230 kwhrs respectively for brooding. His electric hovers have 1320-watt heating elements and are rated for 500 birds.

The first brooding period was during February and March, the most severe part of last winter. Even then Miller brooded for .4 kwhr. per chick. This contrasts with an average of .05 kwhr. for the two summer broods, and indicates that his year-round brooding cost averages less than ¼ kwhr. per chick.

Converted to dollars and cents, says Miller, this cost is about half of what he has been paying for fuel for his flame-type hovers. Important as the economic factor is, the Virginian talks more about other advantages of electrical brooding.

Thermostatically-controlled heating elements allow more accurate temperature control. He starts birds at 95°, drops to 90° at the end of the first week, then continues to adjust temperature downward.

There are no burner units to be cleaned. In fact, the flameless feature is one of the big advantages that Miller sees in electric brooding—it makes for safety and reliability. Initial cost of the electric hovers was the same as his flame-type hovers of equal capacity.

Miller says that he has not been able to see any difference in his feed conversion or mortality rate. His houses are pole-type construction with galvanized roofing and siding. Open area on either side is covered during winter with plastic.

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